

# Notice of Allowability

Application No.

10/067,708

Examiner

Phillip A Johnston

Applicant(s)

WRIGHT ET AL.

Art Unit

2881

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment dated 10-14-2003.
2. ☒ The allowed claim(s) is/are 1, 5, 6, 9-14, 16, 18, 24, 26, 27, 31 and 33-39.
3. ☒ The drawings filed on 02-04-2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

- |   |   |
|---|---|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)              |
| 2 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. <u>121</u> |
| 3 <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No. _____  | 7 <input checked="" type="checkbox"/> Examiner's Amendment/Comment                      |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance     |
|   | 9 <input type="checkbox"/> Other  |

***Detailed Action***

***Examiners Amendment***

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen R. Christian on 12-01-2003. The changes made below are underlined.

The Claims are amended as follows:

-- 1. (Currently Amended) A composite neutron absorbing coating on a substrate surface, the coating comprising:

a neutron absorbing layer overlying at least a portion of the substrate surface;  
and a corrosion resistant top coat layer overlying at least a portion of the neutron absorbing layer; and

wherein the absorbing layer comprises: a nickel-based alloy; and a plurality of neutron absorbing particles dispersed in the nickel-based alloy, the neutron absorbing particles comprising a material selected from the group consisting of gadolinium, gadolinium oxide, gadolinium phosphate, and mixtures thereof; and

wherein the nickel-based alloy comprises nickel, molybdenum, chromium, tungsten, and iron; and

wherein the top coat layer comprises a nickel-based alloy substantially free of neutron absorbing material, and further comprises nickel, molybdenum, chromium, tungsten, and iron. --

--16. (Currently amended) A composite neutron absorbing coating on a substrate surface, the coating comprising:

a bond coat layer overlying at least a portion of the substrate surface; a neutron absorbing layer overlying at least a portion of the substrate surface and at least a portion of the bond coat layer; the neutron absorbing layer comprising:

a metal alloy matrix; and

a plurality of neutron absorbing particles dispersed in the metal alloy matrix, the neutron absorbing particles comprising a material selected from the group consisting of gadolinium oxide, gadolinium phosphate, and mixtures thereof; and

wherein the metal alloy matrix is a nickel-based alloy further comprising nickel, molybdenum, chromium, tungsten, and iron. --

--26. (Currently amended) A thermal neutron absorbing storage system, comprising: one or more surfaces configured to be exposed to thermal neutrons from spent nuclear fuel or other radioactive waste; and

a composite neutron absorbing coating on the one or more surfaces, the coating comprising:

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a neutron absorbing layer overlying at least a portion of the one or more surfaces; and a corrosion resistant top coat layer overlying at least a portion of the neutron absorbing layer; and

wherein the absorbing layer comprises: a nickel-based alloy; and a plurality of neutron absorbing particles dispersed in the nickel-based alloy, the neutron absorbing particles comprising a material selected from the group consisting of gadolinium, gadolinium oxide, gadolinium phosphate, and mixtures thereof; and

wherein the nickel-based alloy comprises nickel, molybdenum, chromium, tungsten, and iron; and

wherein the top coat layer comprises a nickel-based alloy substantially free of neutron absorbing material, and further comprises nickel molybdenum, chromium, tungsten, and iron. --

--35. (Currently amended) A method of forming a composite neutron absorbing coating on a substrate surface, the method comprising: forming a neutron absorbing layer over at least a portion of the substrate surface; and forming a corrosion resistant top coat layer over at least a portion of the neutron absorbing layer; and

wherein the absorbing layer comprises: a nickel-based alloy; and a plurality of neutron absorbing particles dispersed in the nickel-based alloy, the neutron absorbing particles comprising a material selected from the group consisting of gadolinium, gadolinium oxide, gadolinium phosphate, and mixtures thereof; and

wherein the nickel-based alloy comprises nickel, molybdenum, chromium, tungsten, and iron; and

wherein the top coat layer comprises a nickel-based alloy substantially free of neutron absorbing material, and further comprises nickel molybdenum, chromium, tungsten, and iron. --

Claims 3,4,7,8, 20-23, 29,30,32, 41, and 42 are cancelled.

***Examiner's statement of reasons for allowance***

The following is an examiner's statement of reasons for allowance:

2. Amended Claims 1, 13,16,18,24,26,and 35 are allowed because Prior Art fails to show a composite neutron absorbing coating that includes a neutron absorbing layer, a corrosion resistant top coat layer, and a bond coat layer, where a nickel-based alloy comprised of nickel, molybdenum, chromium, tungsten, and iron is used to form each layer; and where gadolinium and compounds of gadolinium are used for the neutron absorbing materials.

Claims 5,6,9-12,14,27,33,34 and 36-39 are allowed because they are dependent upon allowed amended Claims 1,13,16,18,24,26,and 35.

The use of a nickel-based alloy comprised of nickel, molybdenum, chromium, tungsten, and iron, in the formation of each layer of a neutron absorbing composite coating that utilizes gadolinium and compounds of gadolinium for the neutron absorbing material, is patentable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

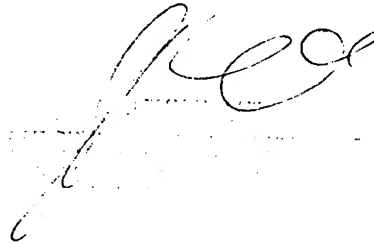
3. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (703) 305-7022. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (703) 308-4116. The fax phone numbers are (703) 872-9318 for regular response activity, and (703) 872-9319 for after-final responses. In addition the customer service fax number is (703) 872- 9317.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

PJ  
December 1, 2003

A handwritten signature in cursive script, appearing to read "P. J.", is written over a faint, dotted horizontal line.